Gastrointestinal tract cancer in Basrah: time, place and histopathological characteristics

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ABSTRACT

Background: This is a cancer registry- based study carried out in Basrah to analyze the pattern of gastrointestinal tract malignant diseases over a period of seven years (2005-2011 inclusive). The study is in line with the work of Basrah Cancer Research Group to quantify cancer in Basrah governorate.

Objectives: To describe the time trend, spatial distribution and histopathological types of gastrointestinal tract cancers in Basrah governorate over the years 2005-2011.

Methods: The data used in the study were based on all new malignant cases which were diagnosed, treated and registered in Basrah cancer registration units. A total of 1601 new cases could be identified. Of these 1123 cases were from the inhabitants of Basrah governorate. The rest were from other Iraqi governorates.

Results: Analysis of cases from Basrah indicated an overall annual incidence rate of gastrointestinal malignant diseases of 6.87 per 100000 population with very little variation with the passage of time from 2005 to 2011. Great variation in the district specific incidence rates was found with Basrah city centre and Shatt Al-Arab districts having the highest incidence rates (8.28 and 8.62 per 100000 population. Other districts have lower incidence rates: north of Basrah (5.59), West of Basrah (4.24) and south of Basrah (4.53). Histopathologically, four types represented 94.2% of total registered cases. Adenocarcinoma was the commonest cancer representing 71.8% followed by Squamous cell carcinoma (12.8%), Non-Hodgkins lymphoma (7.6%) and undifferentiated carcinoma (3.0%).

Conclusions: Gastrointestinal tract cancer represented one of the major cancer groups in Basrah and deserves more care regarding prevention, early detection and treatment and research.

***Key words*: Cancer, Basrah, Incidence, Time trend, place distribution**

سرطان القناة الهضمية في البصرة: الخصائص الزمانية والمكانية والنسجية

خلفية الدراسة: **هذه دراسة مبنية على البيانات المتوفرة في التسجيل السرطاني في البصرة أجريت لتحليل نمط سرطان القناة الهضمية في محافظة البصرة للسنوات ٢٠٠٥–٢٠١١ وهي جزء من مشروع مجموعة البصرة لأبحاث السرطان لقياس السرطان.**

الأهداف: **وصف النمط الزماني والمكاني والنسجي لسرطان القناة الهضمية في محافظة البصرة للسنوات ٢٠٠٥–٢٠١١.**

الطرائق: **اعتمدت الدراسة على البيانات المتوفرة في وحدات التسجيل السرطاني في البصرة والتي تخص الحالات الجديدة لسرطان القناة الهضمية. بلغ مجموع الإصابات المسجلة في البصرة للسنوات أعلاه ١٦٠١ منها ١١٢٣ حالة من سكنة محافظة البصرة.**

النتائج: **بلغ معدل نسبة الإصابة السنوية لسرطان القناة الهضمية في البصرة لكل ١٠٠٠٠٠ نسمة مع نسبة تغاير طفيفة مع مرور السنوات. أما التغاير المكاني فكان واضحا حيث كانت أعلى نسبة إصابة سنوية في مركز مدينة البصرة وفي منطقة شط العرب. أما أوطأ نسبة إصابة فكانت في منطقتي غرب البصرة (الزبير) وجنوب البصرة (أبو الخصيب والفاو). أما من حيث التنوع النسجي فكانت أربعة أنواع هي السائدة وهي السرطان الغددي والطلائي واللمفاوي وغير المتميز ومثلت نسبة تقارب ال٩٥% من مجموع الإصابات.**

الاستنتاج: **يمثل سرطان القناة الهضمية احد الأنواع المهمة في البصرة الا إن الطراز الزماني لا ينذر بتفاقم هذا النوع في المستقبل المنظور عدا سرطان الأمعاء الغليظة.**

INTRODUCTION

Cancer is a growing health problem across the World, in Iraq and in Basrah governorate[1-3] and gastrointestinal tract cancer occupies a significant position among all incident cancer. According to Globocan 2012, GIT Cancer represented about 22% of all reported cancer at global level with a crude incidence rate of about 43.6 per 100000 population.[1] In Iraq, based on data published by the Iraqi Cancer Board, GIT cancer accounted for 10.16% of total registered cases and an average incidence rate of 4.9 per 100000 population in 2009.[2] Very limited data were published about the gastrointestinal tract (GIT) cancer in Iraq and Basrah.[3,4] These publication, however, could not present sufficient

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description on all types, on the extent of risk and distribution of all GIT cancers. They did, however presented useful figures on selected cancers like stomach, colon-rectum, oesophagus and pancreas. According to BCRG data for the years 2005-2008, cancer of the stomach ranked the 10th in all population and in males and 9th in females. The age standardized incidence rates was 4.7 and 3.8 per 100000 males and females respectively.[3] Colon-rectum cancer ranked 5th among males and 8th among females in Basrah over the period 2005-2008. The age standardized incidence rates for males and females were approximately 5.0 and 4.0 per 100000 respectively.[3] Thus, it does seem that GIT occupied a significant position among reported cancer cases in Iraq and in Basrah governorate. In accordance with an advice by the BCRG, it was thought useful to explore in some details, the extent, distribution and other related aspects of GIT cancer in Basrah excluding hepatic and pancreatic cancers. In a previous paper we reported selected demographic and topographic.[5] In this paper, we present data on time trend, geographical distribution and histopathological typing.

PATIENTS AND METHODS

The present study is based on the data on malignant tumours of gastrointestinal tract available in two data bases for cancer in Basrah: National Registration Centre- Basrah section and the Histopathological Cancer Registration Section at the Department of Pathology and Forensic Medicine, College of Medicine, University of Basrah. The study is a record-based, retrospective in type. The data were obtained after permission from Basrah Cancer Research Group and endorsement of the Research Committee at the Directorate General of Health Services in Basrah. The study was also approved by the Research Ethical Committee at Basrah College of Medicine. The research was originally planned as part of the work of Basrah Cancer Research Group (BCRG) and a permission was obtained from them to participate in this piece of research and to use their data for the purpose of the assignment. The data used in this study were extracted from two excel computer files kept by the BCRG, the first covered the years 2005-2008 and the second covered the years 2009-2011. Each of these files compiles information on age, gender, area of residence, date / year of diagnosis, topographical type of cancer by site and histopathological classification on each newly diagnosed case of any cancer. A third sub-file covering only cases with verified histopathology was also used for histopathological description of cancer for the same period of time (2005-2011). All newly diagnosed cases of GIT malignancies (with the exception of those of pancreas and hepatic system) which were registered over seven year's period (2005-2011), were included in the study. Total population estimates were based on data published by the Ministry of Planning and Developmental Collaboration (MoPDC).[6] Breakdown by age and sex were based on numbers published also by the (MoPDC) and on local household surveys in Basrah.

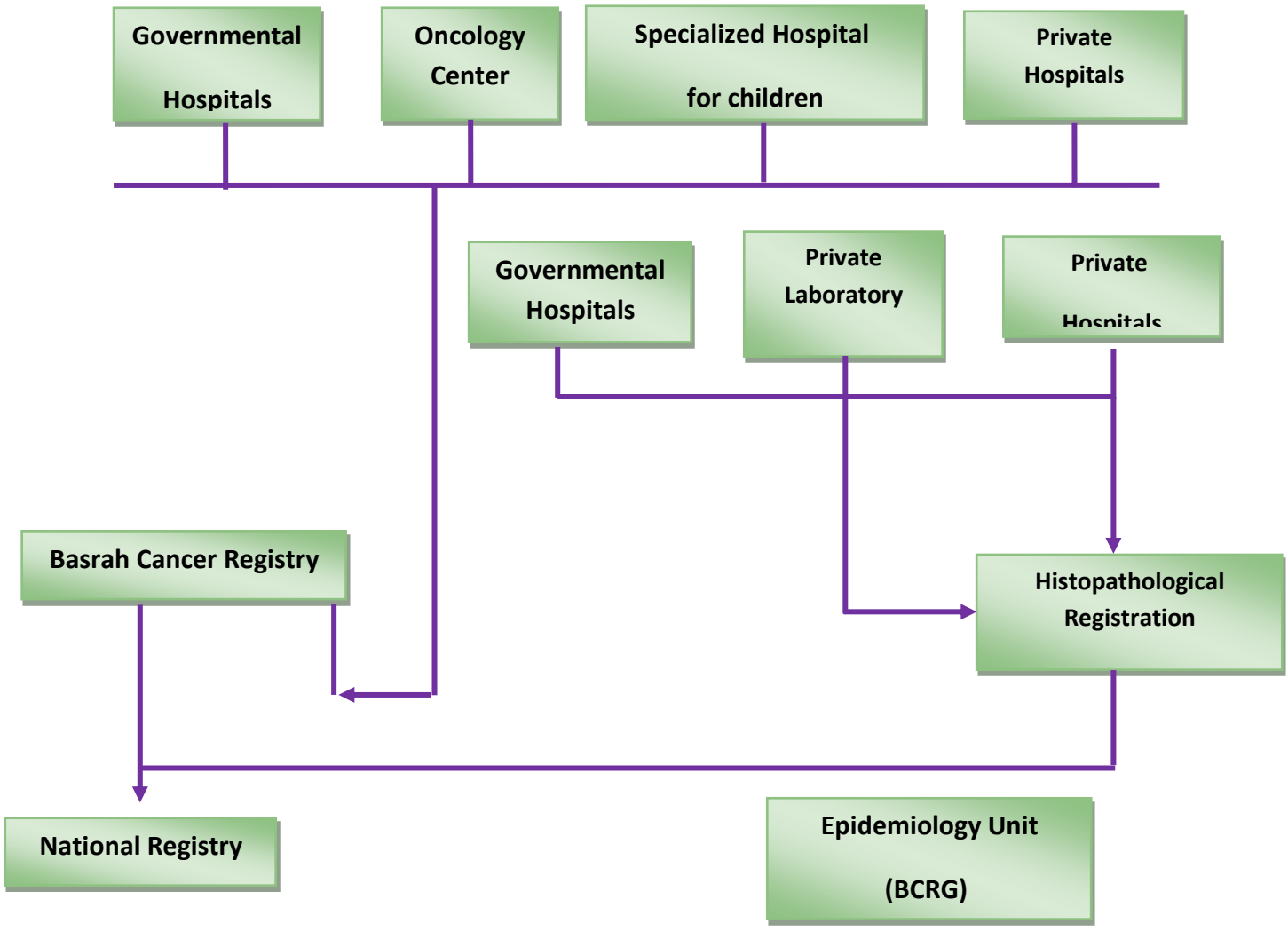

Fig 1. Flow chart for cancer registration in Basrah. (with kind permission of BCRG)

For the statistical analysis of the data, the original excel files of the BCRG were used to sort out GIT cancers first, then, the subset data were checked for any repetition by the investigators, because any given case may be reported to the cancer registry by more than one source. The data were then transferred to SPSS (Statistical Package for Social Science-version 15) computer file for statistical analysis. For place distribution, Basrah governorate was divided into five major administrative areas:[7,8]

Basrah city: From Karma river to end of Bradhia and from Shatt Al-Arab to Basrah River North of Basrah: Qurna, Mdianah and Al-Hartha West of Basrah: Zubair district with its sub-districts. South of Basrah: Abul-Khasib and Faw Districts with sub-districts

East of Basrah: All Shatt-Arab district

RESULTS

Reference population of cases / Governorate of residence

A total of 1601 new cases of GIT cancer were registered in Basrah over the years 2005-2011 by governorate of residence at the time of diagnosis. (Table-1), shows the distribution of these cases by governorate of residence. Out of the total 1601 new cases registered in Basrah, 1123(70.1%) were from the inhabitants of Basrah governorate, other 253(15.8%) were from Thi Qar governorate, 143(8,9%) were from Missan and the remaining 82 (5.1%) were from other governorates.

Table 1. New GIT cancer cases registered in Basrah over the years 2005-2011 by governorate of residence.

Place of residence	No. of cases	%
Basrah governorate	1123	70.14
THi Qar governorate	253	15.80
Missan governorate	143	8.93
All other governorates*	82	5.12
Total	1601	99.99

***These include, Muthanna, Wasit, Qadisia, Babylon, Kerbalaa, Najaf and Baghdad**

Time trend / year of registration:

(Table-2 and Figures-2), show that the variation in the incidence rate of GIT cancer was not substantial with little fluctuation from year to year. (Figure-2), shows a slight tendency for the relative frequency of new cases to increase but the incidence rates tended to decrease with time. When the incidence rates were examined separately for major GIT cancers (Figure-3), it was evident that the reduction with time was for all sites but colon-rectum cancer which tended to rise with time except for 2011.

Table 2. Population estimates, number of new cases, percentages and incidence rates of GIT cancers in Basrah over the years 2005-2011 by year of registration.

Years	Estimated population	No. of new cases	Percentages out of total	IR per 100000 population
2005	2 137 197	164	14.6	7.67
2006	2 201 313 2267	141	12.6	6.41
2007	352	159	14.2	7.01
2008	2335 373	167	14.9	7.15
2009	2 405 4342 467	151	13.4	6.28
2010	531	182	16.2	7.38
2011	2531997	159	14.2	6.28
Average mid-period	2 335 373	1123	100.0	6.87

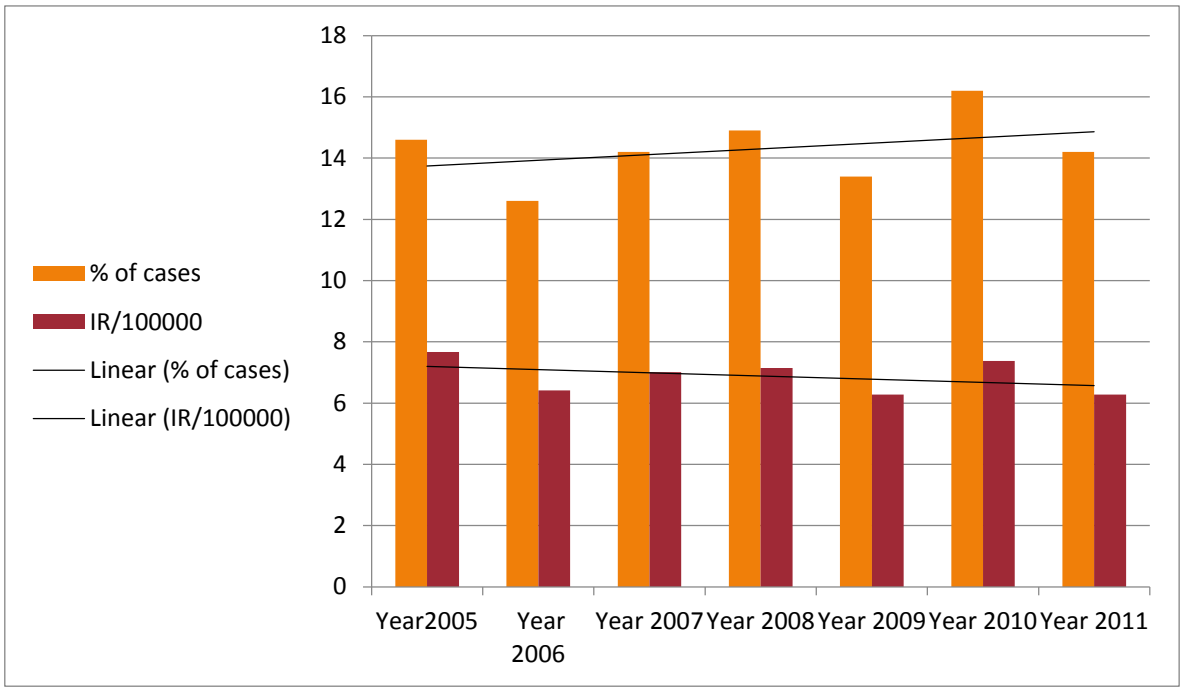

Fig 2. Time trend of the relative frequency(%) and the annual incidence rate of new cases of GIT cancer: Basrah 2005-2011.

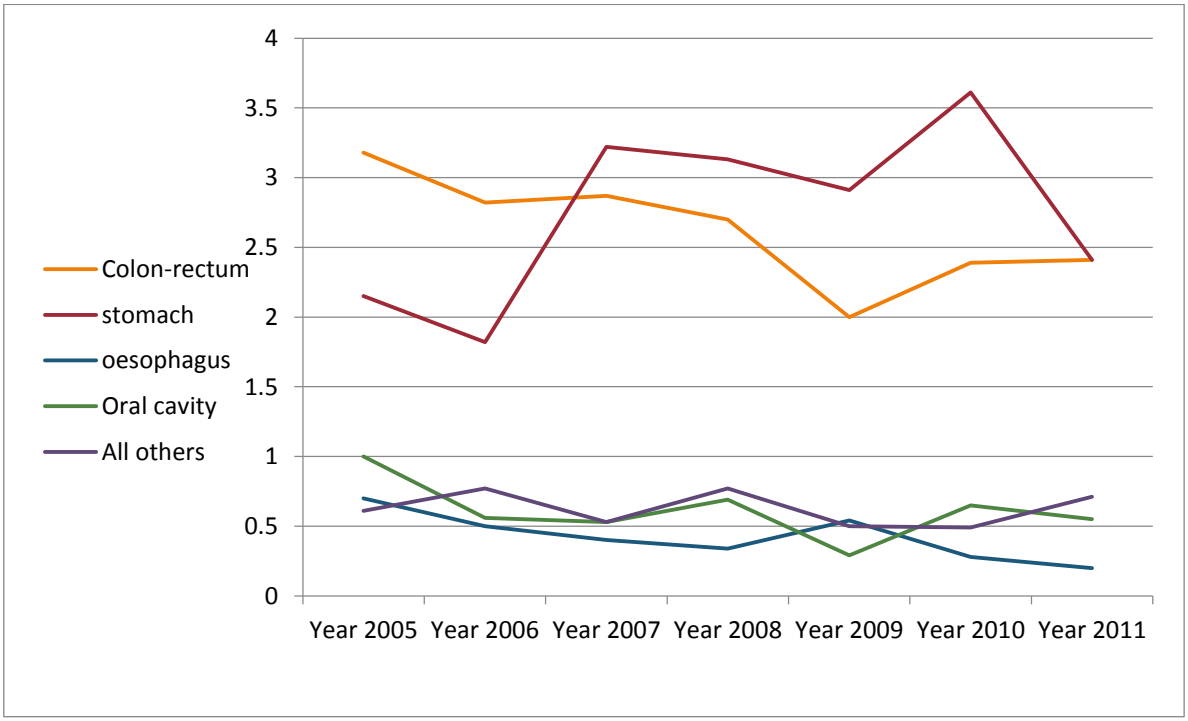

Fig 3. Time trends in the incidence rates per 100000 population of selected GIT cancers: Basrah 2005-2011

District of residence: (Table-3), shows a great variation in the district specific incidence rates of GIT cancer in Basrah governorate with Basrah city centre and East of Basrah (Shatt Al-Arab) districts having the highest incidence rates (8.28 and 8.46 per 100000 population). Other districts have lower incidence rates: north of Basrah (5.59), West of Basrah (4.24) and south of Basrah (4.53).

Table 3. Population estimates, number of new cases and average annual incidence rates of GIT cancers in Basrah over the years 2005-2011 by place of residence.

Place of residence	Estimated population*	No. of new cases In 7 years	IR per 100000 population PER year
Basrah city centre	923604	535	8.28
North of Basrah	659743	258	5.59
West of Basrah	434466	129	4.24
South of Basrah	211159	67	4.53
East of Basrah	106401	63	8.46
Unspecified	---------	71	-
Total	**2335373**	**1123**	**6.87**

Histopathological typing of GIT cancer: (Table-4), summarizes the distribution of GIT cancer by histopathological types. Adenocarcinoma was the predominant histopathological type accounted for 641 (71.3%) with a site specific incidence rate of 3.92 per 100000. Three other cancers were relatively common but much less frequent. These were the Squamous cell carcinoma114 (12.8% and IR of 0.697), Non-Hodgkin's lymphoma 68 (7.6% and IR of 0.416) and undifferentiated carcinoma 27 (3.0% and IR of 0.165). These four histopathological types accounted for 94.6% of all GIT cancer cases.

Table 4. Distribution of GIT cancers by histopathological types

Histopathological type	No. of cases	% out of total	IR per 100000 per year
Adenocarcinoma	641	71.3	3.921
Squamous cell carcinoma	114	12.7	0.697
Non Hodgkin's lymphoma	68	7.6	0.416
Undifferentiated carcinoma	27	3.0	0.165
Adenoid cystic carcinoma	3	0.03	0.018
Acinic carcinoma	4	0.05	0.024
Carcinoid tumour	4	0.05	0.024
Mucoepidermoid carcinoma	8	0.09	0.049
Sarcoma	9	1.0	0.055
Malignant melanoma	4	0.05	0.024
Gastrointestinal stromal tumour	8	0.09	0.049
Ameloblastoma	3	0.03	0.018
Epithelial/myoepithelial carcinoma	1	0.01	0.006
Myofibrohistiocytosis	1	0.01	0006.
Basal cell carcinoma	1	0.01	0.006
Plasmacytoma	1	0.01	0.006
Small cell carcinoma	1	0.01	0.006
Transitional(Basaloid) carcinoma	1	0.01	0.006
Total	899	100.0	----

DISCUSSION

Limitations: The present study is the first comprehensive attempt to quantify GIT cancers in details. However, given the limitations of data in routine statistical sources and the expected relative incompleteness of cancer registries in Iraq and in Basrah, it is illogical to claim that the data on GIT cancers used in this work is complete by any means. According to various documents by Basrah Cancer Research Group during the last seven years, it would be acceptable to assume that the available data on various types of malignant diseases in Basrah including the GIT types are good enough to draw a profile of these cancers including pattern with time.[3.4.7,8] It is clear from the results that Basrah represents an attracting medical centre for cases from within and without the boundaries of the governorate. Almost one out of three cases treated in Basrah are from inhabitants other than Basrah population. This simply means that the medical care resources in Basrah are restrained by this extra-burden created by influx patients. In addition, these cases affect data compilation on cases from inhabitants of Basrah governorate as misclassifications of address of residence and other variables are possible. Intensive efforts were made to verify place of residence to make the data as reliable as possible.

Time Trend: One of the difficult tasks in research on cancer is to describe secular changes in risk and mortality. This difficulty arises mainly from the problems associated with accuracy of diagnosis, completeness of reporting and registration and patients movement during the care seeking process. Additional limitation is imposed by the lack of accurate numbers on denominator populations. In Basrah all these restrictions are operating and further complicated by the desire of patients to seek care outside Basrah and Iraq. It is impossible to quantify the proportion of cases who sought care outside Basrah and failed to be registered and how much variation in this proportions occurring across the years. This means that the time trend of cancer with years could have been slightly distorted. When we examine the time trend of GIT cancer incidence rates in Basrah during the seven years 2005-2011, it is very difficult to draw any clear conclusion. In general it seems that the risk was fairly stable with very little tendency to decline with years. A stable pattern of risk with time is similar to patterns reported for the USA[9] but very different from patterns reported in most neighbouring countries.[10,11] The declining tendency is similar to the situation in Korea. Shin et al (2011) [12] who reported that gastric cancer was declining in Korea over the last two decades. Decline could be due to effective treatment of *H. pylori* infection which is implicated in the aetiology of gastric cancer, a major component of GIT cancer[12] but other factors are also likely to have contributed to this time trend changes.

Distribution by place: The variation in the incidence rates in different districts is substantial. Basrah city as a big urban centre and the eastern district of Shatt-Al-Arab had the highest incidence rate whereas other districts had much lower rates. The explanation for this variation is difficult but could be due to true difference reflecting environmental exposure and lifestyle variables but could be due to variation in ascertainment of cases and accessibility to health care.

Histopathological diagnosis: In the present study, adenocarcinoma was the predominant histopathological type accounted for almost three quarters of cases, followed by squamous cell carcinoma, Non-Hodgkin lymphoma and undifferentiated carcinoma. These four types together represent 94.6% of all G.I.T cancer cases. For different sites of G.I.T, adenocarcinoma was most commonly found in colon-rectum and stomach and this is in agreement with the state of the art about GIT

cancer and findings in other studies.[13,14] Squamous cell carcinoma is more commonly found in upper G.I.T (oral cavity and oesophagus) which is similar to the known pattern of this type of cancer.[15] More than half of the NHL cases were in the stomach and this is also similar to other studies.[16]

In conclusion, GIT cancer represents an important group of malignant disease in Basrah but the time trend is not worrying. Further care to registration is highly recommended.

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